We claim:

1. A method for simultaneous multi-user editing of a document by a plurality of
users including a first user and a second user, the method comprising:

(a) dividing the document into two or more sections;

(b) storing each of the sections in a separate container, wherein each of said
containers may be locked by one of said users;

(c) locking one of said containers at the request of said first user;

(d) allowing said first user to edit the section of said document stored within
said one container;

(e) locking another of said containers at the request of said second user; and

(f) allowing said second user to edit the section of said document stored
within said other container,

wherein steps (d) and (f) occur during at least partially overlapping time periods.

2. The method of claim 1 further comprising:

(g) after step (d), receiving a modified version of said one container from said
first user; and

(h) modifying a master copy of said one container in accordance with said
modified version.

3. The method of claim 1 further comprising:

(i) broadcasting said modified master copy to said second user.

4. The method of claim 2 further comprising:

(j) after step (h), unlocking said one container.

5. The method of claim 4 further comprising:

(k) after step (j), locking said one container at the request of said second user
and allowing said second user to edit said one container.

6.   The method of claim 1 wherein step (c) is performed by:

    i.   allowing said first user to specify said one container;

    ii.   ensuring that said one container is not already locked by any user; and

    iii.   identifying said one container as being locked by said first user.

7.   The method of claim 1 wherein step (c) is performed by:

    i.   allowing said first user to specify said one container;

    ii.   ensuring that said one container is not already locked by any user other than said first user; and

    iii.   identifying said one container as being locked by said first user.

8.   A method of editing a document comprising:

    (a)   obtaining an up-to-date local copy of a document sub-tree corresponding to said document, wherein said local copy corresponds to a master copy of said document sub-tree;

    (b)   allowing a first user to select a section of said document;

    (c)   attempting to lock a selected container within said document sub-tree corresponding to said selected section; and

    (d)   if said selected container is locked in step (c), then:

        i.   allowing the first user to edit the locked section to produce a modified version of said locked section; and

        ii.   posting said modified version of said locked section to a workspace server, wherein said workspace server is configured to modify said master copy of said document sub-tree to correspond to said modified version.

9.   The method of claim 8 wherein step (i) is performed by:

    (i)   obtaining an initial up-to-date local copy of said document sub-tree;

    (ii)   receiving one or more Update messages; and

(iii)   modifying said local copy of said identified containers in accordance with said Update message, to update said local copy to an up-to-date condition.

5   10.   The method of claim 8 wherein step (a) is performed by:

(i)   obtaining an initial up-to-date local copy of said document sub-tree;

(ii)   receiving one or more Update messages;

(iii)   marking said identified containers as being invalid containers; and

(iv)   obtaining up-to-date copies of said invalid containers to update said local

10   copy to an up-to-date condition.

11.   The method of claim 8 wherein step (c) is performed by:

(i)   transmitting a Request Lock message identifying said selected container to said workspace server; and

(ii)   receiving a Lock Confirmed message from said workspace server.

12.   The method of claim 8 wherein during step (d)(i), the first user is allowed to select additional sections of said document and wherein a lock is obtained for selected containers corresponding to said additional section and wherein, during step (d)(ii) all of said locked containers are posted to the workspace server.

13.   The method of claim 12 wherein said locked containers correspond to contiguous sections of said document.

25   14.   The method of claim 8 wherein steps (a) to (d) are performed independently in respect of a second user, and wherein, in respect of the second user, during step (c) said second user is not permitted to select a section of a document that corresponds to a container locked in respect of said first user in step (c).

15.   A method of storing a document having primary data of a primary data type, the method comprising:

(a)   specifying a primary section type corresponding to the primary data type;

(b)   dividing the primary data into one or more sections corresponding to the section type; and

(c)   storing each of said sections in a primary data container, wherein each of said primary data containers includes a field for indicating whether the container has an editing lock set for it.

16.   The method of claim 15 further comprising:

(d)   storing a parent container for said document, the parent container being linked, directly or indirectly, to each of said primary data containers.

17.   The method of claim 16 further comprising:

(e)   storing document information relating to said document in said parent container.

18.   The method of claim 17 wherein said document information includes the title of the document.

19.   The method of claim 18 wherein said document information includes one or more items selected from the list consisting of:

i   a description of the document;

ii.   keywords relating to the document; and

iii   a full or partial history of editing changes relating to the document.

20.   The method of claim 16 wherein said document is a text document and wherein said primary data containers are formed into a linked list having a head primary data container and a tail primary data container and wherein said parent container contains a link to said head primary data container.

– 135 –

21. The method of claim 20 wherein said document information includes one or more default text attributes for said document.

22. The method of claim 21 wherein said document information further includes a format for the document.

23. The method of claim 20 wherein said section type is a paragraph.

24. The method of claim 16 wherein said parent container is linked directly to said primary data containers.

25. The method of claim 16 wherein said document is a presentation document and wherein said primary data type is a slide.

26. The method of claim 15 or A2, wherein said document includes embedded data of a secondary data type and further comprising:

    (f) specifying a secondary section type corresponding to said secondary data type;

    (g) dividing said embedded data into one or more embedded sections corresponding to secondary section type; and

    (h) storing each of the sections of step (g) in an embedded data container, wherein each of said secondary data containers includes a field for indicating whether the container has an editing lock set for it,

wherein each of said embedded container is a direct or indirect child of a primary data container.

27. The method of claim 16, wherein said document includes embedded data of a secondary data type and further comprising:

(f)   specifying a secondary section type corresponding to said secondary data type;

(g)   dividing said embedded data into one or more embedded sections corresponding to secondary section type; and

(h)   storing each of the sections of step (g) in an embedded data container, wherein each of said secondary data containers includes a field for indicating whether the container has an editing lock set for it,

wherein each of said embedded container is a direct or indirect child of a primary data container.

28.   The method of claim 26 wherein each embedded container includes a window field specifying how the embedded data stored in the embedded data container is to be displayed with respect to the primary data stored in the primary data container of which the embedded container is a child.

29.   The method of claim 28 wherein said window field specifies the dimensions of a window in which said embedded data stored in the embedded data container is to be displayed.

30.   The method of claim 29 wherein said window field further specifies a horizontal offset and a vertical offset at which said window is to be displayed from an anchor point of said primary data stored in the primary data container of which the embedded container is a child.

31.   A system for storing a document comprising:

(a)   a network;

(b)   a workspace server coupled to said network;

(c)   a client coupled to said network;

(d)   a file system for storing said documents, wherein

32. A computer readable medium containing a data structure for storing a document comprising:

    (a)   one or more primary data containers for storing a section of said document, wherein each primary data container stores a mutually exclusive section, wherein each of said primary data containers includes a field for indicating whether an editing lock has been set for the container;

    (b)   a parent container having a direct or indirect link to each of said primary data containers.

33. The computer readable medium of claim 32 wherein said primary data containers collectively store all sections of said document.

34. The computer readable medium of claim 32 or G2 wherein said document is a text document, wherein said primary data containers form a linked list having a head primary data container and wherein said parent container maintains a direct link to said head primary data container.

35. The computer readable medium of claim 34 wherein said linked list has a tail primary data container and wherein said parent container maintains a direct link to said tail primary data container.

36. The computer readable medium of claim 33 wherein said document is a text document, wherein said primary data containers form a linked list having a head primary data container and wherein said parent container maintains a direct link to said head primary data container.

37. The computer readable medium of claim 32 wherein said parent container maintains a direct link to each of said primary data containers.

38. The computer readable medium of claim 32 wherein said parent container maintains a link

5   39. The computer readable medium of claim 34 wherein said data structure includes two or more such parent containers, each of said parent containers being at the head of a document sub-tree, each of said document relating to a separate document, and each of said document sub-trees including one or more such primary data containers.

10   40. The computer readable medium of claim 39 wherein the data structure further includes a root container, wherein each of said parent containers is a child of said root container.